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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,607	04/07/2005	Kenichi Ogata	2271/74228	7121

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COOPER & DUNHAM, LLP  
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NEW YORK, NY 10036

EXAMINER
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SOLOMON, LISA

ART UNIT	PAPER NUMBER
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2861

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,607	<b>Applicant(s)</b> OGATA ET AL.	
	<b>Examiner</b> Lisa M. Solomon	<b>Art Unit</b> 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,8,14,16-22,25,29,30,32,36 and 37 is/are rejected.
- 7) ☒ Claim(s) 2,4-7,9-13,15,23-24,26-28,31,33-35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/7/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 18-19, 28, and 37 are objected to because of the following informalities: the word carriage is misspelled as cartridge. Appropriate correction is required.

Applicant is advised that should claim 18 be found allowable, claim 19 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 14, 16-19, 29, 30, 32, and 36-37 are rejected under 35

U.S.C. 102(b) as being anticipated by Murai (JP 2002254630).

In regards to claim 1, *Murai (JP 2002254630) teaches* a recording head comprising: a plurality of nozzles (24, Fig. 3) for ejecting a fluid; a plurality of pressure-applied chambers (29, Fig. 3) arranged in a predetermined direction and each communicating with a corresponding one of the nozzles (24); and a common chamber (28, Fig. 3) having a plurality of wall surfaces and configured to supply the fluid to the pressure-applied chambers (29), at least one of the wall surfaces of the common chamber, along the predetermined direction, having a pressure absorbing surface with a rigidity lower than those of other wall surfaces and configured to absorb a pressure change, said pressure absorbing surface being formed by a pressure absorbing member (31, Fig. 3) having a non-uniform thickness [Abstract, Paragraphs 14 and 19, See also Figs. 3 and 4].

In regards to claim 3, *Murai (JP 2002254630) teaches* the recording head as claimed in claim 1, wherein the pressure-absorbing member (31) has a thin portion and a thick portion having at least two kinds of thicknesses [See Fig. 4].

In regards to claim 14, *Murai (JP 2002254630) teaches* a recording head comprising: a plurality of nozzles (24) for ejecting a fluid; a plurality of pressure-applied chambers (29) arranged in a predetermined direction and each communicating with a corresponding one of the nozzles (24); a common chamber (280 having a plurality of wall surfaces and configured to supply the fluid to the pressure-applied chambers (29); and a plurality of pressure converting means (14) for varying pressures within the pressure-applied chambers (29), at least one of the wall surfaces of the common chamber (28), along the predetermined direction, having a pressure absorbing surface with a rigidity lower than those of other wall surfaces and configured to absorb a pressure change, said pressure absorbing surface being formed by a pressure absorbing member (31) having a plurality of portions with different rigidities [Abstract, Paragraphs 14 and 19, see also Figs. 3 and 4].

In regards to claims 16-19, *Murai (JP 2002254630) teaches* a carriage comprising: a recording head as claimed in claim 1; and a fluid cartridge (102, Fig. 7) configured to supply the fluid to the recording head [Abstract, Paragraph 14, Paragraph 17 lines 1-6, Paragraph 19, See Figs. 3-4 and 7]; a carriage (104, Fig. 7) comprising: a recording head as claimed in claim 14; and a fluid cartridge (102) configured to supply the fluid to the recording head [Paragraph 17 lines 1-6]; An image forming apparatus (100) comprising: a recording head as claimed in claim 1; a fluid cartridge (102) configured to supply the fluid to the recording head; and a carriage (104), accommodating the recording head and the fluid cartridge (102), configured to move in

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a main scan direction which is perpendicular to the predetermined direction [Paragraph 17 lines 1-6].

In regards to claim 29, *Murai (JP 2002254630) teaches* a recording head comprising: a plurality of nozzles (24) for ejecting a fluid; a plurality of pressure-applied chambers (29) arranged in a predetermined direction and each communicating with a corresponding one of the nozzles (24); and a common chamber (28) having a plurality of wall surfaces and configured to supply the fluid to the pressure-applied chambers (29), at least one of the wall surfaces of the common chamber having a free vibration surface (31) having thick portions and thin portions [Abstract, Paragraphs 14 and 19, See also Figs. 3 and 4].

In regards to claim 30, *Murai (JP 2002254630) teaches* the recording head as claimed in claim 29, wherein a member forming the free vibration surface (31) integrally forms a surface of the pressure-applied chamber (29) [See Fig. 3].

In regards to claim 32, *Murai (JP 2002254630) teaches* the recording head as claimed in claim 30, wherein the thick portions have a thickness equal to a thickness of a member forming a wall surface of the pressure-applied chamber (29)[See Fig. 4].

In regards to claims 36 and 37, *Murai (JP 2002254630)* teaches a carriage (104) comprising: a recording head as claimed in claim 29; and a fluid cartridge (102) configured to supply the fluid to the recording head [Abstract, Paragraph 14, Paragraph 17 lines 1-6, Paragraph 19, see also Figs. 3-4 and 7]; an image forming apparatus (100) comprising: a recording head as claimed in claim 29; a fluid cartridge (102) configured to supply the fluid to the recording head; and a carriage (104), accommodating the recording head and the fluid cartridge (102), configured to move in a main scan direction which is perpendicular to the predetermined direction [Paragraph 17 lines 1-6, See also Fig. 7].

5. Claims 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Onda et al. (EP 0 670218).

In regards to claim 20, *Murai (JP 2002254630)* teaches a recording head comprising: a plurality of nozzles (40-1, Fig. 29A) for ejecting a fluid; a plurality of pressure-applied chambers (46, 29A) arranged in a predetermined direction and each communicating with a corresponding one of the nozzles (40-1); a common chamber (48, Fig. 29A) having a plurality of wall surfaces and configured to supply the fluid to the pressure-applied chambers (46); and a plurality of pressure converting means (45, Fig. 25) for varying pressures within the pressure-applied chambers (46), at least one of the

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wall surfaces (430, Fig. 29A) of the common chamber (48), along the predetermined direction, having a damping surface (432, Fig. 29A) with a rigidity lower than those of other wall surfaces and configured to absorb a pressure by vibration, said damping surface (432) being formed by a pressure absorbing member (430) which partially has a region where no damping surface is formed, such that the damping surface (432) extends for a length along the predetermined direction less than a total length of the common chamber(48) along the predetermined direction [Column 21 lines 6-27, See also Figs. 29A and 29B].

In regards to claim 21, *Onda et al. (EP 0 670 218)* teaches the recording head as claimed in claim 20, wherein the pressure absorbing member (430) has a continuous surface forming the damper surface (432) [See Fig. 29A]

In regards to claim 22, *Onda et al. (EP 0 670 218)* teaches the recording head as claimed in claim 20, wherein the region is arranged on both ends of said at least one of the wall surfaces (430) of the common chamber (48) along the predetermined direction [See Fig. 29A].

In regards to claim 25, *Onda et al. (EP 0 670 218)* teaches the recording head as claimed in claim 20, wherein the damper surface (432) has an elasticity lower than those of the other wall surfaces of the common chamber (48) [See Fig. 29A].



Although, there is no explicit teaching of the elasticity of the damper surface by Onda et al. (EP 0 670218) it is inherent that the thin film damper surface be of an elasticity lower than the other wall surfaces of the common chamber to absorb the pressure produced in the common chamber to prevent pressure fluctuations [Column 21 lines 21-27].

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murai (JP 2002254630) in view of Ikeda (JP 10264378).

In regards to claim 8, *Murai (JP 2002254630) teaches* all the claim limitations of claim 8 except, the pressure-absorbing member (31, Fig. 3) is made of nickel.

*Ikeda (JP 10264378) teaches* a diaphragm part of a diaphragm as a pressure absorbing member is made of nickel [Abstract lines 4-11].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide nickel as taught by Ikeda (JP 10264378) as the material for the pressure absorbing member of Murai (JP 2002254630) for the purposes of providing a pressure absorbing member that can handle high-speed printing.

***Allowable Subject Matter***

8. Claims 2, 4-7, 9-13, 15, 23-24, 26-28, 31, and 33-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: In regards to claims 2, 4-7, 9-13, and 15 the prior art does not suggest or disclose the claimed "the pressure absorbing surface is divided into a central portion and two end portions on both sides of the central portion along the predetermined direction, and an average thickness of the pressure absorbing member at the central portion is larger than an average thickness of the pressure absorbing member at the end portions" and "A line type recording head comprising a recording head as claimed in claim 14" in combination with the remaining claim limitations.

In regards to claims 23-24 and 26-28 the prior art does not suggest or disclose claimed "at least a portion of wall surfaces forming the pressure-applied chambers has a rigidity lower than the other wall surfaces to form a vibration plate of the pressure converting means, and both the vibration plate and the damper surface are formed by a common first layer" in combination with the remaining claim limitations.

In regards to claims 31 and 33-35 the prior art does not suggest or disclose the claimed "a member forming the free vibration surface has a stacked structure made up of a plurality of stacked layers" in combination with the remaining claim limitations.

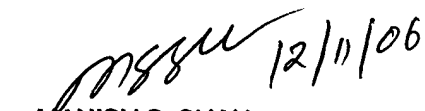
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa M. Solomon whose telephone number is (571) 272-1701. The examiner can normally be reached on Monday - Friday from 8:00 am - 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Lisa M. Solomon  
Patent Examiner  
12/08/2006



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